REMARKS

Applicants would like to thank the Examiner for the thorough review of the present application. As discussed in detail below, the present claims in the present application include recitations that patentably distinguish the claimed invention over the cited references, taken individually or in combination. Based upon the amendments and the following remarks, Applicants respectfully request reconsideration of the present application and allowance of the pending claims.

The Invention

The present invention provides for an improved emergency or interim lighting device. The device of the present invention satisfies the need for an electrochemical lighting system capable of providing prolonged illumination over the life of the electrochemical power unit. The device benefits from the use of light emitting diodes (LEDs) as the illumination source, which provide optimum lumen output with considerably less power consumption than conventional incandescent lighting devices. *By providing for a unique combination of diode arrangement and reflector the present invention overcomes the directional limitations of conventional LED lighting devices and results in wide area illumination coverage.* Additionally the multi-level lighting scheme of the present invention provides for a means of identifying the device during electrical power outage and providing multiple levels of lighting intensity.

In one embodiment of the invention a lighting device that is capable of providing long-term, interim lighting includes an array of Light Emitting Diodes (LEDs) in electrical communication with corresponding electrical circuitry. The array will typically be configured in an elliptical pattern although other patterns such as generally conical, generally circular and the like are also feasible and within the inventive concepts herein disclosed. In one specific embodiment the LEDs comprise both amber and white LED units. The device also includes a means for providing electrical energy to the array of LEDs. In many embodiments the chosen source for electrical energy will be a direct current source, such as an electrochemical source.

However, it is also possible to provide energy to the LEDs via other forms such as solar power, conventional alternating current power or any other means of supplying electrical energy. The lighting device also includes a parabolic reflector positioned proximate to the array of light emitting diodes that reflects light from the LEDs to provide a wide area coverage of illumination. The geometric relationship between the LEDs and the parabolic reflector aids in dispersing the lumen output such that the lighting device is capable of broadcasting a wide-area blanket of light from the reflector. In one embodiment of the invention the elements comprising the LED array face inward toward the parabolic reflector with the reflected light be transmitted outward toward the area to be illuminated.

Claim Rejections

35 U.S.C. 103 (a) Rejections

Untied States Patent No. 6,190,020, issued to Hartley (the Hartley '020 Patent)

Claims 1, 3, 5 and 8-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the Hartley '020 patent. According to the Examiner the Hartley '020 patent teaches a light producing assembly including:

an array of light emitting diodes (**72** column 8, lines 6-10 and column 12, lines 28-32);

an electrical energy source (**26** column 6, lines 5-6); and

a parabolic reflector (column 8, lines 28) to further disperse light.

Claim 1 has been amended to require that the parabolic reflector be further defined as elliptical. The Hartley '020 patent is limited to lighting devices having a *circular* parabolic reflector and does not teach or suggest an implementation using an elliptical parabolic reflector.

By providing for an elliptical parabolic reflector the invention overcomes the directional limitations of conventional LED lighting devices and results in wide area illumination coverage. As stated in the specification at page 3, line 13-16, "A need exists to develop an LED lighting device that is capable of providing wide area illumination coverage. By providing for a device with wide area illumination coverage the device will have useful application in a variety of tasks that include building trades, maritime operations, recreational camping and the like." As such, the device of the present invention is able to provide sufficient lighting to an average sized-room during a power outage or the like. Conventional LED lighting devices suffer from extremely directional light distribution. The elliptical parabolic reflector serves to overcome the directional limitations of the LED device and is instrumental in providing for the *wide area coverage of illumination, as required by Claim 1.*

On the contrary, the Hartley '020 teaching is limited to a handheld flashlight construction in which the parabolic reflector is a conventional circular parabolic reflector. The Hartley '020 patent teaches a circular parabolic collimating reflector **34** and a circular, plate-like, parabolic reflector **80** inside of the bulb assembly **38**. The circular parabolic collimating reflector, which is typical of all standard flashlights, aids in providing a focused light beam, which illuminates a finite area; i.e., the area at which the flashlight is pointed. The Hartley '020 patent does not teach or suggest a lighting device that provides for a wide area of illumination or a "blanket of light". As such, the lighting device of the Hartley '020 patent is incapable of providing illumination to an entire room. Furthermore, if the circular parabolic collimating reflector taught in the Hartley '020 patent was replaced with an elliptical parabolic reflector it would require other flashlight housing elements, such as lens cover **46** and head **24** to be reconfigured to accommodate the elliptical shape of the reflector.

Therefore, the Hartley '020 patent does not teach or suggest a lighting device having an elliptical parabolic reflector and, thus, Claim 1 is distinguishable and patentable.

The Examiner has rejected dependent Claim 5, which requires that the array of LEDs be a generally elliptical patterned array of LEDs. The Examiner asserts that Figures 9 and 10 of the Hartley '020 patent teach a symmetrical patterned LED array and that it would have been obvious for one of ordinary skill in the art to use an elliptical pattern in place of the symmetrical pattern. The Examiner relies on column 12, lines 32-34 in the Hartley '020 patent to argue that various patterns of placement are possible for the LEDs.

Similar to providing for an elliptical parabolic reflector, a generally elliptical patterned array of LEDs overcomes the directional limitations of conventional LED lighting devices and results in wide area illumination coverage. By providing for an elliptical patterned array of LEDs in combination with a suitable parabolic reflector it is possible to impart lighting to a wide area of illumination.

The Hartley '020 patent teaches that various patterns of placement are possible including symmetrical patterns and linear aligned patterns. However, this teaching is described at column 12, lines 28-33 in the context of providing the desired diffusion of the produced light *to a wider area of the collimating reflector*. The Hartley '020 patent fails to consider the problem addressed by the present invention, specifically, providing light to a wide area of coverage, a so-called "blanket of light" that is capable of illuminating a large area, like a room or storage area. Stated in different terms, if an elliptically patterned array of LEDs were implemented in conjunction with the lighting device taught in the Hartley '020 patent it would not result in a lighting device capable of providing wide-area coverage illumination. Claim 5, which includes all of the limitations of Claim 1, requires that the device provide a wide area coverage of illumination. Thus, there is no support in the Examiner's conclusion that an elliptical pattern, which is "known by those of ordinary skill in the art", could be substituted into the structure of the Hartley '020 patent to render the present invention obvious as proposed by the Examiner.

As such, dependent Claim 5 that depends from independent Claim 1 is equally patentable for the subsequent reason. Claim 5 adds the further limitation that the LED array be generally

elliptical, which aids in providing wide area coverage illumination. The benefit of wide area illumination is not addressed in the Hartley patent.

The Hartley '020 Patent in view of Untied States Patent No. 6,139,172, issued to Bos (the Bos '172 Patent)

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the Hartley '020 patent in view of the Bos '172 patent. According to the Examiner, the Hartley '020 patent teaches all of the elements of independent Claim 1 and the Bos '172 patent teaches the further limitation of an array that includes low luminance and high luminance LEDs.

The Examiner asserts that the Bos '172 patent teaches a solid-state light source consisting of multiple LEDs that provide multi-level illumination and the circuitry for selectively activating the LEDs. The applicant fails to appreciate that the teachings of the Bos 172 patent provides for multi-level illumination or, more specifically, as Claim 6 requires *both low luminance and high luminance LEDs*. Claims 2 and 3 of the Bos '172 patent set minimum luminous intensity requirements for one or more LEDs that make up the solid-state light source. These claims do not stipulate that the array will consist of *both* low luminance and high luminance LEDs. Figure 9 of the Bos '172 patent teaches a light source having an ignition switch **112** or rheostat switch **116** for varying the intensity of the LEDs. There is no teaching in the schematic diagram of Figure 9 or elsewhere in the Bos '172 patent that the light source incorporates both low luminance and high luminance LEDs.

As such, dependent Claim 6 that depends from independent Claim 1 is equally patentable for the subsequent reason. Claim 6 adds the further limitation that the LED array include both low luminance and high luminance LEDs. The Bos '172 patent does not teach use of both high and low luminance LEDs as a means of providing for multi-level illumination.

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the Hartley '020 patent in view of the Bos '172 patent. According to the Examiner the Hartley '020 patent teaches the following elements of Claim 19:

> a generally elliptical array of Light Emitting Diodes (LEDs) in electrical communication with corresponding electrical circuitry (**72**, column 8, lines 6-10 and column 12, lines 28-32);
>
> an electrochemical energy source in electrical communication with the electrical circuitry for providing energy to the array of LEDs (**26**, column 6, lines 5-6); and
>
> a parabolic reflector positioned proximate to the array of light emitting diodes that reflects light from the LEDs to provide a wide area coverage of illumination (column 8, lines 20-28).

According to the Examiner, while the Hartley '020 patent does not teach an activation element in electrical communication with the electrical circuitry for selectively activating the LEDS to provide multi-level illumination of the lighting device, this aspect of the invention is taught by the Bos patent (claims 2 and 4 and Figure 9).

As previously discussed in relation to Claim 5, the Hartley' 020 patent fails to teach a generally elliptical patterned array of LEDs that overcomes the directional limitations of conventional LED lighting devices and results in wide area illumination coverage. By providing for an elliptical patterned array of LEDs in combination with a suitable parabolic reflector it is possible to impart lighting to a wide area of illumination.

The Hartley '020 patent teaches that various patterns of placement are possible including symmetrical patterns and linear aligned patterns. However, this teaching is described at column 12, lines 28-33 in the context of providing the desired diffusion of the produced light *to a wider*

area of the collimating reflector. The Hartley '020 patent fails to consider the problem addressed by the present invention, specifically, providing light to a wide area of coverage, a so-called "blanket of light" that is capable of illuminating a large area, like a room or storage area. Stated in different terms, if an elliptically patterned array of LEDs were implemented in conjunction with the lighting device taught in the Hartley '020 patent it would not result a lighting device capable of providing wide-area coverage illumination. Claim 19 requires that the device provide a wide are coverage of illumination.

Claim 19 has been amended to include the further limitation that the LED array includes both low luminance and high luminance LEDs. Low and high luminance LEDs are provided in the present invention to accommodate one form of multi-level illumination. For example, three part illumination can be affected by activating only the low luminance LEDs, activating only the high luminance LEDs or activating both the high and low luminance LEDs.

As previously discussed in relation to Claim 6, the applicant fails to appreciate that the teachings of the Bos 172 patent provide for *low luminance and high luminance LEDs*. Claims 2 and 3 of the Bos '172 patent set minimum luminous intensity requirements for one or more LEDs that make up the solid-state light source. These claims do not stipulate that the array will consist of *both* low luminance and high luminance LEDs. Figure 9 of the Bos '172 patent teaches a light source having an ignition switch **112** or rheostat switch **116** for varying the intensity of the LEDs. There is not teaching in the schematic diagram of Figure 9 or elsewhere in the Bos '172 patent that the light source incorporates both low luminance and high luminance LEDs.

Therefore, since the Hartley '020 patent does not teach or suggest a lighting device having a generally elliptical patterned array of LEDs and since the Bos '172 patent does not teach an LED array including both low and high luminance LEDs, the applicant believes that Claim 19 is distinguishable from the cited references and patentable.

Additional Claims

Claim 27 reflects the fact that the invention is not limited to an elliptical parabolic reflector but, instead, encompasses all non-circular parabolic reflectors that provide for a wide area coverage of illumination.

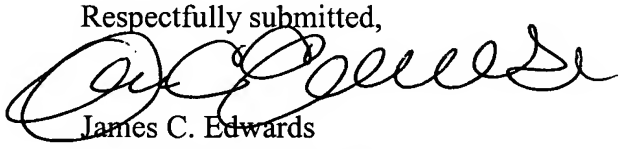
Claim 31 reflects the fact that novelty lies in a generally elliptical patterned array of LEDs in combination with a parabolic reflector that provides for wide area illumination.

Conclusion

In view of the proposed amended claims, the new claims reflecting previously allowable subject matter and the remarks submitted above, it is respectfully submitted that the present claims are in condition for immediate allowance. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicant's undersigned attorney to resolve any remaining issues in order to expedite examination of the present invention.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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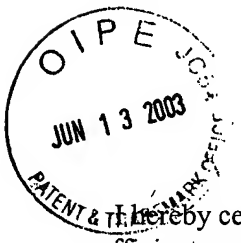

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313, on June 10, 2003.

Sarah B. Simmons

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Version with Markings to Show Changes Made:

In the Claims:

1. (Amended) A lighting device capable of providing long-term, interim lighting capabilities, the lighting system comprising:

an array of Light Emitting Diodes (LEDs) in electrical communication with corresponding electrical circuitry;

an electrical energy source for supplying electrical energy to the array of LEDs; and

[a] an elliptical parabolic reflector positioned proximate to the array of light emitting diodes that reflects light from the LEDs to provide a wide area coverage of illumination.

19. (Amended) A lighting device capable of providing long-term, interim lighting capabilities, the lighting system comprising:

a generally elliptical array of Light Emitting Diodes (LEDs) in electrical communication with corresponding electrical circuitry, the array including low luminance and high luminance LEDs;

an electrochemical energy source in electrical communication with the electrical circuitry for providing energy to the array of LEDs;

an activation element in electrical communication with the electrical circuitry for selectively activating the LEDS to provide multi-level illumination of the lighting device; and

a parabolic reflector positioned proximate to the array of light emitting diodes that reflects light from the LEDs to provide a wide area coverage of illumination.

20. (Cancelled)

27. (New) A lighting device capable of providing long-term, interim lighting capabilities, the lighting system comprising:

an array of Light Emitting Diodes (LEDs) in electrical communication with corresponding electrical circuitry;

an electrical energy source for supplying electrical energy to the array of LEDs; and

a non-circular parabolic reflector positioned proximate to the array of light emitting diodes that reflects light from the LEDs to provide a wide area coverage of illumination.

28. (New) The lighting device of Claim 27, wherein the array of LEDs further comprises a generally elliptical patterned array of LEDs.

29. (New) The lighting device of Claim 27, wherein the array of LEDs further comprises an array of low luminance LEDs and high luminance LEDs.

30. (New) The lighting device of Claim 27, wherein the array of LEDs is positioned to face in a direction generally opposite the wide area coverage of illumination.

31. (New) A lighting device capable of providing long-term, interim lighting capabilities, the lighting system comprising:

an elliptical patterned array of Light Emitting Diodes (LEDs) in electrical communication with corresponding electrical circuitry;

an electrical energy source for supplying electrical energy to the array of LEDs; and

a parabolic reflector positioned proximate to the elliptical patterned array of light emitting diodes that reflects light from the LEDs to provide a wide area coverage of illumination.

32. (New) The lighting device of Claim 31, wherein the array of LEDs further comprises an array of low luminance LEDs and high luminance LEDs.

33. (New) The lighting device of Claim 31, wherein the array of LEDs is positioned to face in a direction generally opposite the wide area coverage of illumination.